

REMARKS

Claims 1-12 are presently pending in the application. Claims 1-10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell et al. (U.S. Patent No. 5,573,679) and Murphy (U.S. Patent No. 4,993,072). Claims 11 and 12 are rejected under 35 U.S.C. 103 as being unpatentable over Mitchell et al. and Murphy, and further in view of Summerfelt (U.S. Patent No. 5,585,300).

The invention of claims 1-12 is drawn to an integrated microphone structure comprising a sensing electrode, a sensing membrane, a counter electrode and a sensing transistor having a gate. The Murphy patent '072 teaches the construction of an electret microphone. An electret transducer is generally an insulator that cannot be used as the conducting gate electrode of a transistor. The sandwich diaphragm of the invention of the application is fundamentally different from an electret. The inclusion of a charge storing conductor such as polysilicon in the diaphragm allows its extension to form the gate electrodes of an integrated unit. Figure 3 of the Murphy patent '072 shows the attachment to a field effect transistor 40. Figure 1 shows the details of the layer 26. At column 2, lines 29-32 it is described how layer 26 "has layer 24 of insulation deposited in its recess central area 19" and that a "layer 27 of electret" is deposited on the other side of layer 26. As electret is an insulator, it can be seen that layer 26 is encapsulated within insulating layers and therefore cannot be part of an integrated structure which has the sensing electrode "connected to the gate of a sensing transistor".

The Mitchell et al. '679 reference teaches methods of constructing microphones using silicon as sacrificial layers. It follows that the exposed conducting layers 16 and 22 shown in

Mitchell's conducting layers 16 and 22 shown in Figures and 1 and 2e cannot be made of polysilicon or similar materials.

The Office Action on page 3 states that Murphy reference '679 teaches (i.e., Figures 1 and 2) to connect the sensing electrode 33 to the gate electrode of sensing transistor 40. The membrane 33 is made of "flexible plastic" (column 2, lines 39-40 of Mitchell). This construction is consistent with known electret technology, namely, to use an insulator material (plastic) for electrodes. The electrical conductive coating on the electrodes are for shielding the electrodes to reduce stray capacitance between the electrodes of the other components of the transducer (see column 1, lines 49-52 of Mitchell).

Rather than being connected to the gate, element 33 of Mitchell is connected (see column 1, lines 58-61) to a drain or source of the FET transistor 40. As such, it is described to act as a shield for the electrode to reduce stray capacitance. The protective conducting coatings in Mitchell are for electrical interference isolation rather than for conducting sensing currents.

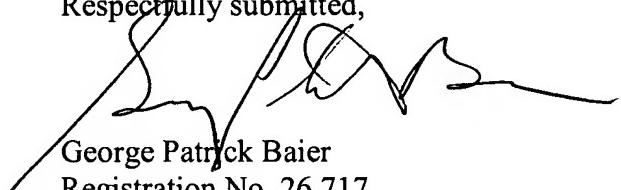
The Office Action has also rejected claims 11 and 12 under 35 U.S.C. 103(a) as being unpatentable over Mitchell et al. and Murphy as applied to claim 1 and further in view of Summerfelt (U.S. Patent No. 5,585,300). While claims 11-12 should be patentable relative to the above discussions of Mitchell et al. and Murphy, the addition of Summerfelt '300 does not make the invention of claims 11 and 12 unpatentable as obvious. The Summerfelt '300 reference teaches the formation of multi-layer electrodes for construction of solid state memory. The technology of Summerfelt is totally different than that of the microphone technology. The plates of the microphone must be free floating, those of the memory devices described in Summerfelt are not flexible or free floating, to the contrary, they are rigid structures. It would not be obvious

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in designing a free floating device having flexible membranes to look for solutions in the solid structures which have different stress and mechanical constraints. There are no teachings to combine multi-layer rigid electrode technology into flexible membrane technology and it would not be obvious for one skilled in the art to do so.

Reconsideration of claims 1-12 is respectfully requested. Should the Examiner have any questions concerning this application, please contact the undersigned at 412-562-1635.

Respectfully submitted,



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